

REMARKS

Claims 1-26 are pending in the present application. In the Office Action dated June 9, 2004 the Examiner rejected claims 1-3 and 5-7 under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 1,650,908 to Ramsey ("Ramsey") in view of United States Patent No. 6,293,204 to Regen ("Regen"). Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the Ramsey patent in view of the Regen patent, further in view of United States Patent No. 4,222,330 to Krystyniak ("Krystyniak"). In this response, the Applicants propose to amend claim 1 and add new claims 27-46.

Embodiments Disclosed in the Present Application

The embodiments disclosed in the present application will now be discussed in comparison to the cited references. Of course, the discussion of the disclosed embodiments, and the discussion of the differences between the disclosed embodiments and the cited references, do not define the scope or interpretation of any of the claims. Instead, such discussed differences merely help the Examiner appreciate important claim distinctions discussed thereafter.

The present application is directed, in part, to ammunition having an identifier. One embodiment includes an ammunition cartridge 10 for a firearm having a bullet 12 with a first identification surface positioned thereon. The ammunition cartridge 10 further includes a casing 14 that retains the bullet 12. The casing 14 further includes a second identification surface. An identifier including a code 31 comprised of a plurality of optically identifiable characters may be positioned on at least one of the first and the second identification surfaces to identify the origin of the ammunition article and repetitively applied to the first and/or second identification surfaces. In another embodiment, the projectile comprises a mass of generally spherically-shaped pellets and a wad is positioned within the casing having a third identification surface that may contain the identifier.

In one embodiment shown in Figure 2, the identifier includes a code prefix 32 that generally includes similar characters, such as dot, dimples or other similarly recognizable figures. The identifier also includes a code body 34 that includes a plurality of readily recognizable and distinct characters, which may be a serial arrangement of numbers and/or letters, or even a randomly selected arrangement of numbers and/or letters. In one embodiment, the plurality of optically identifiable characters may be a combination of alphanumeric characters. In another embodiment, the optically identifiable characters may be selected from

the characters available on a standard keyboard or a 256 character set. Thus, the code 31 may be easily interpreted by a person, such as a police officer, at a crime scene. The bullets 12 or casings 14 bearing the code 31 do not have to be sent to a crime lab to be deciphered or interpreted. Thus, an alphanumeric code facilitates the investigation of a crime by allowing a police officer to easily interpret the code and rapidly transmit the code via telephone or radio facilitating the investigation of the crime. Employing an alphanumeric code further enables a code 31 to be applied in a number of different languages and character sets.

As shown in Figure 2a, the identifiers may be identically reproduced numerous times on a portion of the bullet 12 (e.g., the base 26) or the casing 14. The identifier may be applied to the identification surface so as to occupy substantially all of the surface area of the identification surface that it is applied to. In another embodiment, the codes 31 may be applied to the web portion 24 of the casing 14, which is particularly resistant to alteration or eradication because it is deeply recessed within the casing 14. Furthermore, the code 31 may be more easily applied to the web portion 24 of the casing 14 by using a process such as, for example, laser ablation. In yet another embodiment, the identifiers may be applied to a portion of the bullet 12 or the casing 14 so that the codes 31 are formed in identifiable rows and are staggered so that the codes 31 do not form identifiable columns. The codes 31 may also be applied to the base 26 of the bullet 21 in a circular arrangement, or in still other arrangements. The placement of the code on the base 26 of the bullet 21 so that the code is symmetrically placed thereon may also advantageously prevent the bullet from becoming unbalanced due to the application of the code 31. Thus, the ballistic properties of the bullet will not be altered due to the application of the code 31. The repetitive placement of the code 31 on at least one of the identification surfaces of the ammunition cartridge advantageously helps to ensure that at least one of the codes 31 (Figure 2) remains intact and identifiable despite deformation and/or fragmentation of the bullet 12.

Cited References

The Examiner has cited the Regen patent. The Regen patent discloses labeling projectiles and casings with two dimensional binary arrays. The binary arrays consist of at least six cells in each dimension, each cell being either marked with a shallow indent to symbolize either a "1" or a "0." A projectile may also be labeled with the inclusion of foreign matter such as small steel pins penetrating the projectile's rear end centered in certain cells to indicate a "1." In Figure 2, the Regan patent appears to disclose using a redundant marking on the base of a projectile. The casings may also be labeled on their cylindrical surfaces, with the arrays being

placed on either the inside or the outside of the casing. Each binary array appears to occupy a significant portion of the surface area of the base of the projectile. Therefore, while a redundant marking appears to be disclosed, the marking is not particularly robust because each array is so large and only a few may be applied to an identification surface.

The Regen patent fails to disclose or fairly suggest the use of a combination of alphanumeric characters. In fact, the Regen patent teaches away from employing a compact identifier including a code comprised of a combination of alphanumeric characters. In contrast, the Regen patent employs a two dimensional binary array for representing a single number. This two dimensional binary array will occupy a substantially larger surface area than a corresponding alphanumeric code. As a result, the array can be easily damaged upon discharge from a firearm to a sufficient extent that identification of the bullet or casing is not possible. This will be particularly prevalent when the binary array code of the Regen patent is applied to the base of a lead-based bullet where approximately 80%-90% of the base is destroyed upon discharge from a firearm. In contrast, Applicants' alphanumeric codes occupy a relatively small area so that the bullet or casing can be identified if even a small part of the casing or bullet survives intact.

The Applicants' alphanumeric code enables forming a significantly greater number of codes than available for the corresponding same number of characters in a binary code. For example, for a six cell binary row, the six cells may be used to represent the numbers 0 through 61. While for a six cell row employing a character set having 90 alphanumeric characters, 6.1×10^7 permutations may be used. In order for Regen to increase the number of available codes, more cells must be added to the array. By adding more cells to the array, the array increases in size. The increase in the size of the code of Regen further decreases the likelihood that a bullet fragment containing the code will be intact and identifiable upon discharge from a firearm. In contrast, the Applicants' repetitively applied alphanumeric code is designed so that the bullet will be identifiable even if only a small fragment is found.

The Applicants' alphanumeric code also enables providing a code that may be in a number of different foreign languages. An example of an alphanumeric code employing English characters is "A*12345." The characters "A*" may symbolize one aspect of the identity of the ammunition, while the numbers "12345" may symbolize another aspect of the identity of the ammunition. Another example of an alphanumeric code employing a foreign language such as Greek characters is "δ)12345," where the portion of the code "δ)" symbolizes one aspect of the identity of the ammunition and the portion "12345" symbolizes another aspect.

In further contrast to the Applicants' alphanumeric code, the Regen patent's use of shallow indents to symbolize a "1" or "0" is not likely to be distinguishable from surface defect features (e.g., roughness, craters, pits, ridges, etc.) when applied to a small caliber bullet or when the binary array dimension is sufficiently large to require that shallow indents be very small.

The Regen patent also does not disclose or fairly suggest codes formed in identifiable rows and staggered so that the codes do not form identifiable columns. By staggering the code, the survivability of the code upon discharge from a firearm is further enhanced. Furthermore, the Regen patent does not disclose or fairly suggest an identifier including a code applied to the web portion of a casing which is particularly resistant to alteration and eradication because it is deeply recessed within the casing.

The Examiner has also cited the Ramsey patent for disclosing an identifiable ammunition article. Referring to Figure 1, a bullet 1 includes numerals 2 impressed on a base portion of the bullet 1. A filler line 4 occupies the remaining space on the base of the bullet 1 to indicate the absence of higher numbers. In Figure 4, Ramsey discloses that the designating numerals 2 are positioned along the edge of the jacket material on the bullet 1, so that the numerals 2 may be impressed into a material that is relatively harder than the core material, which is comprised of lead. The filler line 4 is also impressed into the edge of the jacket material to prevent the impression of additional numerals. Applicants note that the numerals 2 impressed on the base portion of the bullet 1 are segregated into a single group of numerals 2, which are bounded by the filler line 4, so that the repetition of the single group of numerals 2 is effectively prevented.

Accordingly, the Ramsey patent fails to disclose or fairly suggest, the repetitive application of a code to a component of an ammunition cartridge or the identifier occupying substantially all of the surface area of the identification surface that it is applied to. The Ramsey patent further fails to disclose or fairly suggest a projectile that comprises a mass of generally spherically-shaped pellets and a wad is positioned within the casing having an identification surface. The Ramsey patent is not directed to ammunition cartridges of the type employed in shotgun ammunition.

The Examiner has also cited the Krystyniak patent. The Krystyniak patent discloses an apparatus and a method for magnetically tagging an ammunition article, wherein particles such as ferrites having at least one Curie temperature may be incorporated into various components of the ammunition article. In one embodiment, the magnetic particles may be

incorporated into the metal comprising the bullet or the cartridge casing. In other embodiments, the magnetic particles may be incorporated into the propellant compound or into the compound comprising the primer. The Curie temperature associated with the magnetic particles may be readily detected by heating the particles in the presence of a magnetic field, so that changes in magnetization may be readily detected. Accordingly, since the magnetic particles are generally comprised of a predetermined mixture of materials having different Curie temperatures, the presence or absence of a particular Curie temperature may be used to identify the marked component of the ammunition article.

The Krystyniak patent does not disclose a code that is comprised of optically identifiable characters that are repetitively applied to an identification surface. If anything, the Krystyniak patent teaches away from employing optically identifiable characters because the magnetic tagging is designed to overcome the unreliability of optical identifiable characters remaining on an identification surface upon discharge from a firearm.

Claims and Rejections

Turning now to the claims, patentably distinct differences between the actual claim language and the applied references will be specifically pointed out. As proposed to be amended, claim 1 recites, in part, “an identifier positioned on at least one of the first and the second identification surfaces, the identifier further including a code comprised of a plurality of optically identifiable characters, the plurality of optically identifiable characters comprising *a combination of alphanumeric characters*, the code being identically and repetitively applied to the identification surfaces.” None of the cited references teach or suggest the combination of limitations recited above. Specifically, the Regen patent does not teach or suggest employing a code comprised of a combination of alphanumeric characters or recognize the advantages of employing a combination of alphanumeric characters.

Claims depending from claim 1 are also allowable due to depending from an allowable base claim and further in view of the additional limitations recited in the dependent claims. For example dependent claim 46 recites “wherein the identifier occupies substantially all of the surface area of the identification surface that the identifier is applied to.” None of the cited references disclose or fairly suggest such a limitation.

New claim 27 recites, “a projectile; a casing that is coupled to the projectile that includes a first identification surface, *wherein the first identification surface comprises a web portion of the casing*; and an identifier positioned on the first identification surface, the

identifier further including a code comprised of a plurality of optically identifiable characters, the code being identically and repetitively applied to the first identification surface.” None of the cited references teach or suggest the combination of limitations recited above in new claim 27. Specifically, none of the cited references teaches or fairly suggest an identifier including a code comprised of a plurality of optically identifiable characters, the code being identically and repetitively applied to the web portion of the casing.

The Examiner has combined the Krystyniak patent and the Regen patent to purportedly teach an identifier including a code comprised of a plurality of optically identifiable characters, the code being identically and repetitively applied to the web portion of the casing. However, as combined by the Examiner, the combination of the Regen patent and the Krystyniak patent is improper. Specifically, the Regen patent does not disclose or fairly suggest an identifier located on the web portion of the casing. Furthermore, the Regen patent emphasizes the importance of employing a code that is readable by the human eye and thus specifically teaches away from employing magnetically tagging ammunition since it is not readable by a human eye. (Column 4, lines 27-32). While the Krystyniak patent discloses magnetic particles for magnetic tagging disposed on the web portion of the casing, there is no motivation or suggestion to modify the Krystyniak patent to substitute a code comprised of a plurality of optically identifiable characters for the magnetic particles. Such a substitution would modify a fundamental operating principle of the Krystyniak patent and proceed contrary to the teachings thereof. The fundamental purpose of the Krystyniak patent is to provide a more robust way of tagging ammunition than can be accomplished with a code comprised of a plurality of optically identifiable characters. Furthermore, neither of the cited references recognize the benefits of placing a code comprised of a plurality of optically identifiable characters on the web portion of the casing. A code comprised of a plurality of optically identifiable characters on the web portion of the casing is particularly resistant to alteration or eradication because it is deeply recessed within the casing. Claims depending from claim 27 are also allowable due to depending from an allowable base claim and further in view of the additional limitations recited in the dependent claims.

New claim 36, recites “a projectile comprising a mass of generally spherically-shaped pellets; a casing that is coupled to the projectile; a wad positioned within the casing; and an identifier positioned on at least one of the projectile, casing, and wad, the identifier further including a code comprised of a plurality of optically identifiable characters, the code being identically and repetitively applied to the identification surfaces.” None of the cited

references disclose or fairly suggest a projectile comprising a mass of generally spherically-shaped pellets. Claims depending from claim 27 are also allowable due to depending from an allowable base claim and further in view of the additional limitations recited in the dependent claims.

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

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